

NON-PUBLIC?: N
ACCESSION #: 8901230001
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Davis-Besse Unit 1 PAGE: 1 of 3

DOCKET NUMBER: 05000346

TITLE: Inadvertant Reactor Trip
EVENT DATE: 12/17/88 LER #: 88-028-00 REPORT DATE: 01/16/89

OPERATING MODE: 1 POWER LEVEL: 028

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Charles S. Gordon, Senior Nuclear Specialist TELEPHONE: (419) 249-5000

COMPONENT FAILURE DESCRIPTION:
CAUSE: A SYSTEM: COMPONENT: MANUFACTURER:
E SB PCV F130
REPORTABLE TO NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On December 17, 1988, the reactor was operating in mode 1 at approximately 28 percent power. The operators were increasing reactor power by increasing feedwater flow and reactor demand to come off of low-level limits. This caused Reactor Average Temperature to decrease. The Integrated Control System responded by withdrawing control rods. This combination of events increased indicated reactor power, resulting in a reactor trip on high flux at 0743 hours. Following the trip, a Turbine bypass valve failed open and increased the cooldown rate. The operators shut Main Steam Isolation Valve number 2 and reduced the cooldown rate. The cooldown was terminated within approximately 17 minutes.

The apparent cause of this occurrence was failure to establish high flux trip setpoints appropriate for coming off low level limits and the calibration error between heat balance power and indicated reactor power. Requirements for pre-evaluation briefings will be incorporated in the conduct of Operations Procedure DB-OP-00000 by March 31, 1989. A modification to the turbine bypass valve is being considered for implementation during a forthcoming planned maintenance

outage to minimize water accumulation which contributed to the turbine bypass valve failure.

END OF ABSTRACT

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Description of Occurrence:

On December 17, 1988, the reactor was operating in mode 1 at approximately 28 percent power. The operators were in the process of increasing power to make the transition through low level limits. The 1 MFP speed, delta Tc, and SG/Reactor demand station were in manual. The high flux trip setpoints were set at 50% in anticipation of physics testing at 40% power. The ICS (JA) Reactor Demand High Limit had not been lowered below the high flux trip setpoint (it was set at approximately 80% power).

Shortly before the event the plant was experiencing oscillations in FW flow, steam pressure, MWe, RCS pressure, and Tave. The operators were increasing power by increasing the Integrated Control System (ICS) Steam Generator/Reactor Demand signal. The increase in demand caused feedwater flow to increase, which resulted in the main flow control valve opening. As a result, the main feedwater (SJ) control valve differential pressure decreased. The reactor operator, in turn, increased feedpump speed to restore the differential pressure. This further increased feedwater flow. Reactor Average Temperature (Tave) decreased approximately 3 degrees F due to the increase in feedwater flow and the integrated control system responded by pulling control rods to restore Tave. The combination of a decrease in Tave and withdrawal of the control rods caused indicated reactor power to increase to greater than the high flux trip setpoints which resulted in a reactor trip at 0743 hours. At the time of the trip actual core power was approximately 35%.

Following the reactor trip, a turbine bypass valve (JI) failed open which increased the Reactor Coolant System cooldown rate. The operators shut Main Steam (SB) Isolation Valve (MSIV) number 2 and reduced the cooldown rate. The cooldown was terminated within approximately 17 minutes of the trip.

This condition is being reported according to 10 CFR 50.73(a)(2)(iv) as an automatic initiation of the Reactor Protection System (RPS) (JC) .

Apparent Cause of Occurrence:

The apparent cause of this occurrence was failure to establish the high flux trip setpoints appropriate for coming off low level limits and a nine percent calibration error between heat balance power and indicated reactor power. This

error is due to increasing cold leg temperature as power is increased but is within the allowable limits provided in procedures.

Water Accumulation is believed to be the cause of the bypass valve failure.

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Analysis of Occurrence:

The plant performed as designed with the exception of the failed bypass valve. This valve failure in conjunction with the low decay heat load caused a higher than normal Reactor Coolant System cooldown rate. This higher than normal cooldown rate was within allowable values. There were no safety consequences identified during this event.

Corrective Action:

The turbine bypass valves were tested by Maintenance Work Order (MWO) 1-88-3030-00. The failed turbine bypass valve (Fisher Valve Model 476D, Bailey Positioner Model 5324090-2/B) has been isolated and removed from service. System design changes, to further minimize water accumulation believed to contribute to turbine bypass valve failure, are being considered for implementation during a forthcoming planned maintenance outage. Maintenance procedures are being further revised to ensure proper setup of the positioner and travel stop for the turbine bypass valves. Requirements for pre-evolution shift briefings will be incorporated in the Conduct of Operations Procedure DB-OP-00000 to address transition points, such as high flux trip setpoints, where trips are likely to occur, the potential for excessive cooling due to low decay heat load, and abnormal system line-ups that could require alternate operator actions to establish plant control. This revision will be completed by March 31, 1989.

Failure Data:

Previous LER's (85-002 and 86-043) identified Reactor trips due to personnel error. However, the events which caused these trips were not related to the trip described in this LER. Previous failures (LER's 85-013 and 87-011) of turbine bypass valves have been reported. The corrective actions associated with these LER's and this event should eliminate the cause of these failures.

REPORT NO.: NP-33-88-033

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TOLEDO EDISON
EDISON PLAZA

300 MADISON AVENUE
TOLEDO, OHIO 43652-0001

January 16, 1989

Log No: KA89-4002 NP-33-88-033
Docket No. 50-346 License No. NPF-3

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Gentlemen:

LER No. 88-028
Davis-Besse Nuclear Power Station Unit No. 1
Date of Occurrence - December 17, 1988

Enclosed is Licensee Event Report 88-028, which is being submitted in accordance with 10 CFR 50.73(a)(2)(iv) to provide 30 days written notification of the subject occurrence.

Yours Truly,

Louis F. Storz
Plant Manager
Davis-Besse Nuclear Power Station

LFS/tmt

cc: Mr. A. Bert Davis
Regional Administrator
USNRC Region III

Mr. Paul Byron
DB-1 NRC Resident Inspector

ACCESSION #: 8901230004
